REMARKS

Claims 1-15 were pending in this application, of which claims 2 and 11 have been canceled and the rest amended. Claims 16-21 are newly added, and are patentable for the reasons set out below.

The subject matter of claim 4 is now divided between amended claim 4 and a new claim 16. Similarly, claim 18 includes subject matter removed from claim 7.

New dependent claims 17, 19, and 21 recite that the region attenuation processed sound has a duration between 0.1 seconds and 7 seconds. This is supported in the specification at page 37, first full paragraph. Thus, claims 1, 3-10, and 12-19 are pending in this application.

In response to the official action:

Claims 1-4 are rejected under 35 U.S.C. §102(b) as being anticipated by Beller (U.S. Patent 3,920,903).

This rejection is respectfully traversed. Claim 1 recites auditory sense training using sound attenuated over a predetermined frequency region (that is, band-attenuated sound). The Abstract of Beller discloses "speech training device ... filtered selectively ... between 6,000-8,000 Hz". But claim 1 as amended also recites alternating the band-attenuated sound with the original (non-attenuated) sound (or, alternating with silence.)[1]

Beller teaches attenuations alternating at half-hour intervals (col. 3, lines 28-32), with adjustments made gradually over the training period according to the judgment of the trainer (Abstract). The Applicant sees no disclosure in Beller of alternating processed sound with un-

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[1] Claim 2, line 4, recited band-attenuated sound "either listened to continuously, or [not continuously]." However, the word "or" is not included in claim 1.

processed sound, and in fact sees no disclosure of using unprocessed sound. Thus, claim 1 as amended is not anticipated.

Claims 3 and 4 depend from claim 1 and further recite features not disclosed by Beller. Beller's operator-controlled adjustments are not "random" as claimed because a human deliberately makes the adjustments, and the adjustments appear to change monotonically.

Claims 5-7 and 10-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Merzenich (U.S. Patent 5,813,862) in view of Kato (U.S. Patent 5,119,420).

Claim 5 and claim 10 as amended recite alternation of processed and non-processed sound, a feature that is not disclosed by either applied reference. The Examiner is invited to consider:

At col. 4, lines 1-4, Merzenich writes that its method includes "modifying the amplitudes and timing of ... phonetic elements without changing their fundamental frequencies." By "timing," Merzenich apparently means changing the *durations* of the phonetic elements, using a method shown in Fig. 6C (which fits into the middle of Fig. 6B, between C and H). Merzenich states (col. 9, line 28) that "modifying the time scale is to elongate the stop consonants and ... to shorten [the] vowel sounds, or in other instances, to decrease the 'dead' time [silence] between words." Starting at col. 9, line 35, Merzenich discusses the mechanism for changing the timing, which is based on a Fourier transform and is thus a function of frequency.

Merzenich does not disclose alternating processed and non-processed sound, because *every* part of speech (silence, vowels, and consonants) is modified in duration or amplitude. Also, the durations of the phonetic elements (silence, consonants, and vowels) are a function of the *sound itself*, and therefore is not random or automatic (which relates to claims 7 and 18).

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Merzenich does not disclose mixing sounds from left and right channels, and the Examiner relies on Kato for this feature. Kato discloses delaying one channel relative to the other so as to create a phase shift that gives a sense of separation between loudspeakers, and Kato also discloses adding to one channel a signal from the other channel that is delayed and attenuated.

The Examiner asserts that it would have been obvious to apply the channel mixing of Kato to Merzenich because "the human body is concerned with binaural listening" (page 3, line 8), but this asserted motivation for combining the references is respectfully traversed as too general. The rejection has not established that stereo localization relates in any way to speech comprehension, and has provided no reason for the person of ordinary skill to have a adjusted the stereo timing of Merzenich.

Claims 8-9, and 14-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Merzenich in view of Kunugi (U.S. Patent 4,980,914).

In Fig. 24 Kunugi shows a binaural listener and states (col. 15, lines 22-55), "in Fig. 24, two walls are provided ... In Fig. 25, the effects of reflected waves 17-19L and 17-19R are eliminated ... phases of the right and left channel ... are controlled ... [this] corrects the propagation characteristic in the sound field in a general room." The purpose of Kunugi's phase modification is "a flat frequency characteristic" (Abstract) and "excellent stereo signal reproduction" (col. 3, line 31).

In contrast, Merzenich discloses as alternatives a single loudspeaker 20 and headphones 22 (Fig. 1), and shows no walls. Clearly, Merzenich is not concerned with how sound from stereo loudspeakers bounces off walls, and it teaches severe distortion of sound rather than high fidelity. Kunugi and Merzenich are not at all concerned with the same objects.
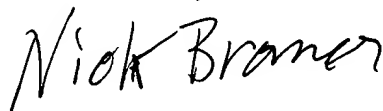
There is no suggestion in the references that the phase modification of Kunugi would improve the speech therapy of Merzenich, and Merzenich does not suggest the use of phase shifts. Therefore, the person of ordinary skill in the art would not have modified Merzenich according to Kunugi, as the Examiner proposes. With respect, the assertion that Kunugi's phase shifts would improve learning (page 4, line 2) is not supported by citation or argument.

Withdrawal of the rejections and allowance of all claims is requested.

In the event this paper is not timely filed, then this paper is a petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosure: Version With Markings to Show Changes

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VERSION OF CLAIMS WITH MARKINGS TO SHOW CHANGES

Cancel claim 2 without prejudice to re-entry and combine it into claim 1, as follows:

1. (Amended) An auditory sense training method for training the auditory sense of a trainee, the method comprising: [by having a sound formed by]

processing an original sound, [listened to: wherein] to form a region attenuation processed sound, [formed] by attenuating a predetermined frequency region of said original sound;

having the trainee listen to said region attenuation processed sound; and [is listened to by a trainee.]

alternating said region attenuation processed sound with at least one of silence and said original sound.

3. (Amended) [An] The auditory sense training method according to claim 1, wherein the predetermined frequency region [of said original sound to be performed of] formed by said attenuation process is either

a region under a predetermined frequency in the range between 1800 Hz and 7000 Hz,

a region over a predetermined frequency in the range between 2000 Hz and 7000 Hz, or

two regions [of] further comprising a region under a predetermined frequency in the range between 1800 Hz and 7000 Hz and a region over a predetermined frequency in the range between 2000 Hz and 7000 Hz, and wherein

the region attenuation process is performed to either one or a combination of more than two of said regions.

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4. (Amended) [An] The auditory sense training method according to claim 1, wherein said predetermined frequency region changes randomly among [attenuation process is performed to] a plurality of various frequencies. [, said frequencies and the processing time being set randomly and arranged in time order.]

5. (Amended) An auditory sense training method for training the auditory sense of a trainee, the method comprising:

[by] having the trainee listen to a sound of [more than two] channels formed in part by processing an original sound [listened] to form a processed sound: wherein

[a] the processed sound and [a] non-processed sound are listened to alternately by a trainee, said processed sound being [performed of] formed by a process where an amplitude attenuation processed sound formed by attenuating an amplitude of the original sound of one channel is outputted to the one channel, and an amplitude attenuation processed sound formed by attenuating an amplitude of the original sound of the one channel is superposed to the original sound of another channel and outputted to the other channel.

6. (Amended) [An] The auditory sense training method according to claim 5, wherein said process is performed so that [the] a sum of the amplitude attenuation processed sound being outputted to said one channel and the amplitude attenuation processed sound being outputted to said other channel is fixed for one channel signal.

7. (Amended) [An] The auditory sense training method according to claim 6, wherein said process includes a plurality of various process patterns. [, said process patterns and the processing time being set randomly and arranged in time order.]

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8. (Amended) An auditory sense training method for training the auditory sense of a trainee, the method comprising:

[by] having the trainee listen to a sound formed in part by processing an original sound [listened] to form a phase reverse processed sound that is formed by a phase reverse process performed on said original sound for roughly reversing the phase of the original sound: wherein

said original sound and [a] the phase reverse processed sound [formed by performing a phase reverse process to said original sound for roughly reversing the phase of the original sound] are listened to alternately by said trainee.

9. (Amended) [An] The auditory sense training method according to claim 8, wherein [the] a processing time of said phase reverse process is set randomly and arranged in time order.

Cancel claim 11 without prejudice to re-entry and combine it into claim 10:

10. (Amended) A sound processing method for auditory sense training of a trainee, the method comprising:

[to be used in an auditory sense training method for training auditory sense by]

having the trainee listen to a sound of [more than two] channels formed by sound processing an original sound [listened to]: wherein

said sound processing includes [a process where an amplitude attenuation processed sound formed by] attenuating the amplitude of the original sound of [one] a first [channel is outputted to one channel, and an amplitude attenuation processed sound formed by attenuating the amplitude of the original sound of one channel is superposed] and superposing the attenuated sound of the first channel onto the original sound of [another] a second channel: [and outputted to the other channel]

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wherein the processed sound formed by said process is outputted alternately with a sound not being formed by said process.

12. (Amended) [A] The sound processing method for auditory sense training disclosed in claim 10, wherein said process [characterizes] is characterized in that the sum of said amplitude attenuation processed sound outputted to said one channel and said amplitude attenuation processed sound outputted to said other channel is fixed for one channel signal.

13. (Amended) [A] The sound processing method for auditory sense training disclosed in claim 10, wherein said process is performed by a plurality of various process patterns. [, said process patterns and the processing time being set randomly and arranged in time order.]

14. (Amended) A sound processing method for auditory sense training of a trainee, the method comprising:

[to be used in an auditory sense training method for training auditory sense by]

having the trainee listen to a sound formed by processing an original sound [listened to]: wherein

a phase reverse process for reversing the phase of the original sound is performed [to] on said original sound.

15. (Amended) [A] The sound processing method for auditory sense training according to claim 14, wherein the processing time of said phase reverse process is set randomly.